

## Refine Search

### Search Results -

Terms	Documents
(1,3-dibromo-5-n-propyl-5-methylhydantoin or 1,3-dibromo-5-propyl-5-methylhydantoin or 1,3-dibromo-5-n-propyl-5-methylhydantoin) same (water or aqueous) and (biofilm or antimicrobial or microbiocidal or biocidal) and free chlorine	0

Database:

US Pre-Grant Publication Full-Text Database  
 US Patents Full-Text Database  
 US OCR Full-Text Database  
 EPO Abstracts Database  
 JPO Abstracts Database  
 Derwent World Patents Index  
 IBM Technical Disclosure Bulletins

Search:

L13

Refine Search

Recall Text

Clear

Interrupt

### Search History

DATE: Sunday, December 09, 2007   
 [Purge Queries](#)   
 [Printable Copy](#)   
 [Create Case](#)

SetName Query
 side by  
side

*DB=EPAB,JPAB,DWPI; PLUR=YES; OP=ADJ*

L13 (1,3-dibromo-5-n-propyl-5-methylhydantoin or 1,3-dibromo-5-propyl-5-methylhydantoin or 1,3-dibromo-5-n-propyl-5-methylhydantoin) same (water or aqueous) and (biofilm or antimicrobial or microbiocidal or biocidal) and free chlorine

L12 (1,3-dibromo-5,5-dialkyl-methylhydantoin or 1,3-dibromo-5-ethyl-5-methylhydantoin or 1,3-dibromo-5-n-propyl-5-methylhydantoin) same (water or aqueous) and (biofilm or antimicrobial or microbiocidal or biocidal) and free chlorine

*DB=PGPB,USPT; PLUR=YES; OP=ADJ*

L11 (1,3-dibromo-5,5-dialkyl-methylhydantoin or 1,3-dibromo-5-ethyl-5-methylhydantoin or 1,3-dibromo-5-n-propyl-5-methylhydantoin) same (water or aqueous) and (biofilm or antimicrobial or microbiocidal or biocidal) and free chlorine

L10 (1,3-dibromo-5-n-propyl-5-methylhydantoin or 1,3-dibromo-5-propyl-5-methylhydantoin or 1,3-dibromo-5-n-propyl-5-methylhydantoin) same (water or aqueous) and (biofilm or antimicrobial or microbiocidal or biocidal) and free chlorine

L9 (1,3-dibromo-5-n-propyl-5-methylhydantoin or 1,3-dibromo-5-propyl-5-methylhydantoin or 1,3-dibromo-5-n-propyl-5-methylhydantoin) same (water or aqueous) and (biofilm or antimicrobial or microbiocidal or biocidal) and free chlorine

L8 1,3-dibromo-5,5-dialkyl-methylhydantoin and 11

L7 1,3-dibromo-5-ethyl-5-methylhydantoin and 11

L6 1,3-dibromo-5-methyl-5-methylhydantoin and 11

L5 1,3-dibromo-5-(methyl or ethyl or butyl or propyl or isobutyl or isopropyl)-5-methylhydantoin and 11

L4 1,3-dibromo-5-adj5-5-methylhydantoin and 11

L3 1,3-dibromo-5-adj5-5-methylhydantoin and L2

*DB=USOC; PLUR=YES; OP=ADJ*

L2 L1

*DB=PGPB,USPT; PLUR=YES; OP=ADJ*

L1 ("2130805"|"2392505"|"2398598"|"2779764"|"2795556"|"2868787"|"2920997"|"2971959"|"2971959")

END OF SEARCH HISTORY

## Hit List

[First Hit](#)[Clear](#)[Generate Collection](#)[Print](#)[Fwd Refs](#)[Bkwd Refs](#)[Generate OACS](#)

Search Results - Record(s) 1 through 9 of 9 returned.

☐ 1. Document ID: US 20040265446 A1

L11: Entry 1 of 9

File: PGPB

Dec 30, 2004

PGPUB-DOCUMENT-NUMBER: 20040265446

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20040265446 A1

TITLE: Microbiocidal control in the processing of poultry

PUBLICATION-DATE: December 30, 2004

US-CL-CURRENT: 426/332

APPL-NO: 10/603132 [PALM]

DATE FILED: June 24, 2003

### REFERENCE TO COPENDING APPLICATIONS

[0001] Reference is hereby made to U.S. application Ser. No. 10/029,329, filed Dec. 21, 2001, and to U.S. application Ser. No. 10/028,631, filed Dec. 21, 2001 (presently owned by one of the two joint owners of the present application), both of which Applications are continuations-in-part of application Ser. No. 09/893,581, filed Jun. 28, 2001, now abandoned, and to U.S. application Ser. No. 10/313,245, filed Dec. 6, 2002, which is a continuation-in-part of commonly-owned copending U.S. application Ser. No. 10/029,329, filed Dec. 21, 2001, which in turn is a continuation-in-part of commonly-owned copending application Ser. No. 09/893,581, filed Jun. 28, 2001, now abandoned. Application Ser. No. 10/029,329 is owned by another party, and application Ser. No. 10/028,631 is presently owned by one of the two joint owners of the present application. Reference is also hereby made to PCT International Application No. PCT/US02/41479, filed Dec. 26, 2002, which is also presently owned by one of the two joint owners of the present application, in which the United States is one of the designated countries or regions, and to U.S. application Ser. No. \_\_\_\_\_ [Case SU-7275\_\_\_\_\_], filed [contemporaneously herewith] (presently owned by that other party). Three of these applications relate, inter alia, to use of 1,3-dibromo-5,5-dialkylhydantoins as treating agents for water used in the field of animal processing, while the fourth application relates, inter alia, to use of 1,3-dihalo-5,5-dialkylhydantoins other than 1,3-dibromo-5,5-dialkylhydantoins as treating agents for water used in the field of animal processing.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RMAC	Drawings
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	------	----------

☐ 2. Document ID: US 20040200780 A1

L11: Entry 2 of 9

File: PGPB

Oct 14, 2004

PGPUB-DOCUMENT-NUMBER: 20040200780  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20040200780 A1

TITLE: Methods and systems for uniform control of bromine concentrations in water

PUBLICATION-DATE: October 14, 2004

US-CL-CURRENT: 210/746; 210/752

APPL-NO: 10/834292 [PALM]  
DATE FILED: April 26, 2004

## RELATED-US-APPL-DATA:

Application 10/834292 is a division-of US application 10/010296, filed December 5, 2001, US Patent No. 6749758

## REFERENCE TO RELATED APPLICATIONS

[0001] This application is a division of commonly-owned copending application Ser. No. 10/010,296 filed Dec. 5, 2001.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	INDEX	Drawings
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	-------	----------

☐ 3. Document ID: US 20040082632 A1

L11: Entry 3 of 9

File: PGPB

Apr 29, 2004

PGPUB-DOCUMENT-NUMBER: 20040082632  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20040082632 A1

TITLE: Methods for microbiological control in aqueous systems

PUBLICATION-DATE: April 29, 2004

US-CL-CURRENT: 514/389

APPL-NO: 10/688124 [PALM]  
DATE FILED: October 17, 2003

## RELATED-US-APPL-DATA:

Application 10/688124 is a division-of US application 09/775516, filed February 2, 2001, US Patent No. 6641828  
Application 09/775516 is a continuation-in-part-of US application 09/484938, filed January 18, 2000, US Patent No. 6565868

## REFERENCE TO RELATED APPLICATION

[0001] This is a Division of commonly-owned copending Application No. 09/775,516, filed Feb. 2, 2001, which in turn is a continuation-in-part of commonly-owned

copending application Ser. No. 09/484,938, filed Jan. 18, 2000, now U.S. Pat. No. 6,565,868 B1, issued May 20, 2003.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RMC	Drawings
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	-----	----------

☐ 4. Document ID: US 20030228341 A1

L11: Entry 4 of 9

File: PGPB

Dec 11, 2003

PGPUB-DOCUMENT-NUMBER: 20030228341

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030228341 A1

TITLE: Microbiological control in aqueous systems

PUBLICATION-DATE: December 11, 2003

US-CL-CURRENT: 424/405; 514/390

APPL-NO: 09/778228 [PALM]

DATE FILED: February 6, 2001

RELATED-US-APPL-DATA:

Application 09/778228 is a continuation-in-part-of US application 09/484938, filed January 18, 2000, US Patent No. 6565868

Application 09/778228 is a continuation-in-part-of US application 09/775516, filed February 2, 2001, PENDING

REFERENCE TO RELATED APPLICATIONS

[0001] This Application is a continuation-in-part of commonly-owned copending application Ser. No. 09/484,938, filed Jan. 18, 2000 and [Case No. SU-7190]\_filed Feb. 2, 2001.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RMC	Drawings
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	-----	----------

☐ 5. Document ID: US 20030102271 A1

L11: Entry 5 of 9

File: PGPB

Jun 5, 2003

PGPUB-DOCUMENT-NUMBER: 20030102271

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030102271 A1

TITLE: Methods and systems for uniform control of bromine concentrations in water

PUBLICATION-DATE: June 5, 2003

US-CL-CURRENT: 210/764

APPL-NO: 10/010296 [PALM]

DATE FILED: December 5, 2001

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	FIGS	Drawings
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	------	----------

☐ 6. Document ID: US 20020120000 A1

L11: Entry 6 of 9

File: PGPB

Aug 29, 2002

PGPUB-DOCUMENT-NUMBER: 20020120000

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020120000 A1

TITLE: Microbiological control in aqueous systems

PUBLICATION-DATE: August 29, 2002

US-CL-CURRENT: 514/389

APPL-NO: 09/974626 [PALM]

DATE FILED: October 9, 2001

## RELATED-US-APPL-DATA:

Application 09/974626 is a continuation-in-part-of US application 09/484938, filed January 18, 2000, PENDING

Application 09/974626 is a continuation-in-part-of US application 09/775516, filed February 2, 2001, PENDING

## REFERENCE TO RELATED APPLICATIONS

[0001] This is a continuation-in-part of commonly-owned copending application Ser. No. 09/484,938, filed Jan. 18, 2000, and commonly-owned copending application Ser. No. 09/775,516, filed Feb. 2, 2001.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	FIGS	Drawings
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	------	----------

☐ 7. Document ID: US 6749758 B2

L11: Entry 7 of 9

File: USPT

Jun 15, 2004

US-PAT-NO: 6749758

DOCUMENT-IDENTIFIER: US 6749758 B2

TITLE: Methods and systems for uniform-control of bromine concentrations in water

DATE-ISSUED: June 15, 2004

US-CL-CURRENT: 210/746; 210/752, 210/755, 210/764, 422/3, 422/37

APPL-NO: 10/010296 [PALM]

DATE FILED: December 5, 2001

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	FIGS	Drawings
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	------	----------

☐ 8. Document ID: US 6641828 B1

L11: Entry 8 of 9

File: USPT

Nov 4, 2003

US-PAT-NO: 6641828

DOCUMENT-IDENTIFIER: US 6641828 B1

TITLE: Methods for microbiological control in aqueous systems

DATE-ISSUED: November 4, 2003

US-CL-CURRENT: 424/405; 424/408, 424/417, 424/420, 514/389

APPL-NO: 09/775516 [PALM]

DATE FILED: February 2, 2001

## PARENT-CASE:

REFERENCE TO RELATED APPLICATION This is a continuation-in-part of commonly-owned copending application Ser. No. 09/484,938, filed Jan. 18, 2000. REFERENCE TO OTHER COMMONLY-OWNED APPLICATIONS Commonly-owned copending application Ser. No. 09/484,844, filed Jan. 18, 2000, describes and claims chemical processes from which compositions of the present invention can be formed or derived. Commonly-owned copending application Ser. No. 09/484,687, filed Jan. 18, 2000, describes and claims 1,3-dibromo-5,5-dimethylhydantoin particulate solids producible by the processes of application Ser. No. 09/484,844, such solids having unprecedented enhanced properties, and compacted articles made from such particulate solids without use of a binder. Commonly-owned copending application Ser. No. 09/487,816, filed Jan. 18, 2000, relates in part to converting 1,3-dihalo-5,5-dimethylhydantoins into compacted articles using novel binders. Commonly-owned copending application Ser. No. 09/484,891, filed Jan. 18, 2000, relates to the compacting of 1,3-dihalo-5,5-dimethylhydantoins other than 1,3-dibromo-5,5-dimethylhydantoin without use of binders, and to the novel compacted forms so produced. Commonly-owned copending application Ser. No. 09/483,896, filed Jan. 18, 2000, relates to the granulation of small average particle size 1,3-dibromo-5,5-dimethylhydantoin and also to the compaction of such granulated products to form larger-sized articles.

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	RMC	Drawings
------	-------	----------	-------	--------	----------------	------	-----------	--	--	--------	-----	----------

☐ 9. Document ID: US 6638959 B2

L11: Entry 9 of 9

File: USPT

Oct 28, 2003

US-PAT-NO: 6638959

DOCUMENT-IDENTIFIER: US 6638959 B2

TITLE: Microbiological control in aqueous systems

DATE-ISSUED: October 28, 2003

US-CL-CURRENT: 514/389; 252/175, 252/388, 252/390, 424/405, 424/406, 424/407, 424/408, 424/409, 424/417, 424/420, 424/421

APPL-NO: 09/974626 [PALM]

DATE FILED: October 9, 2001

## PARENT-CASE:

REFERENCE TO RELATED APPLICATIONS This is a continuation-in-part of commonly-owned copending application Ser. No. 09/484,938, filed Jan. 18, 2000, and commonly-owned copending application Ser. No. 09/775,516, filed Feb. 2, 2001. REFERENCE TO OTHER COMMONLY-OWNED APPLICATIONS Commonly-owned copending application Ser. No. 09/323,348, filed Jun. 1, 1999; Ser. Nos. 09/483,896; 09/484,687; 09/484,844; 09/484,891; 09/487,816 each filed Jan. 18, 2000; Ser. No. 09/778,228, filed Feb. 6, 2001; and Ser. No. 09/893,581, filed Jun. 28, 2001 relate to subject matter that may be of interest in connection with the present subject matter.

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	AMC	Drawings
------	-------	----------	-------	--------	----------------	------	-----------	--	--	--------	-----	----------

Clear

Generate Collection

Print

Fwd Refs

Bkwd Refs

Generate OACS

Terms	Documents
(1,3-dibromo-5,5-dialkyl-methylhydantoin or 1,3-dibromo-5-ethyl-5-methylhydantoin or 1,3-dibromo-5-methyl-5-methylhydantoin) same (water or aqueous) and (biofilm or antimicrobial or microbiocidal or biocidal) and free chlorine	9

Display Format: 

Change Format

[Previous Page](#)[Next Page](#)[Go to Doc#](#)



[First Hit](#) [Fwd Refs](#)[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

Generate Collection

Print

L11: Entry 8 of 9

File: USPT

Nov 4, 2003

US-PAT-NO: 6641828

DOCUMENT-IDENTIFIER: US 6641828 B1

TITLE: Methods for microbiological control in aqueous systems

DATE-ISSUED: November 4, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Howarth; Jonathan N.	Baton Rouge	LA		
Nalepa; Christopher J.	Baton Rouge	LA		
Sanders; Michael J.	Baton Rouge	LA		

US-CL-CURRENT: [424/405](#); [424/408](#), [424/417](#), [424/420](#), [514/389](#)

## CLAIMS:

That which is claimed is:

1. A method of providing microbiological control in an aqueous medium and/or eradication or reduction of biofilm on a surface in contact with such aqueous medium, which method comprises introducing into the aqueous medium a microbiocidally effective amount of at least one 1,3-dibromo-5,5-dialkylhydantoin in which one of the alkyl groups in the 5-position is a methyl group and in which the other alkyl group in the 5-position has in the range of 1 to 4 carbon atoms, wherein (i) the molar quantity of said at least one 1,3-dibromo-5,5-dialkylhydantoin introduced into said aqueous medium is less than the molar quantity of N,N'-bromochloro-5,5-dimethylhydantoin that would be required to effect the same degree of microbiological control in said medium, (ii) the quantity of said at least one 1,3-dibromo-5,5-dialkylhydantoin introduced into said aqueous medium releases an amount of "free chlorine" that is greater than the amount of "free chlorine" that would be released in said medium by an equimolar quantity of N,N'-bromochloro-5,5-dimethylhydantoin, and (iii) the amount of "free chlorine" released by the quantity of said at least one 1,3-dibromo-5,5-dialkylhydantoin introduced into said medium is greater than the amount of "free chlorine" that could be predicted to be released by that quantity of said at least one 1,3-dibromo-5,5-dialkylhydantoin on the basis of the amount of "free chlorine" that would be released in said medium by an equimolar quantity of N,N'-bromochloro-5,5-dimethylhydantoin.

2. A method of claim 1 wherein said at least one 1,3-dibromo-5,5-dialkylhydantoin is 1,3-dibromo-5-isobutyl-5-methylhydantoin.

3. A method of claim 1 wherein said at least one 1,3-dibromo-5,5-dialkylhydantoin is 1,3-dibromo-5-n-propyl-5-methylhydantoin.

4. A method of claim 1 wherein said at least one 1,3-dibromo-5,5-

dialkylhydantoin is 1,3-dibromo-5-ethyl-5-methylhydantoin.

5. A method of claim 1 wherein said at least one 1,3-dibromo-5,5-dialkylhydantoin is a mixture of two or more of said 1,3-dibromo-5,5-dialkylhydantoins.

6. A method of claim 1 wherein said at least one 1,3-dibromo-5,5-dialkylhydantoin is a mixture of 1,3-dibromo-5,5-dimethylhydantoin and 1,3-dibromo-5-ethyl-5-methylhydantoin.

7. A method of claim 1 wherein said aqueous medium has a pH of at least about 8.0.

8. A method of providing microbiological control in an aqueous medium having a pH of at least about 8.0 and/or eradication or reduction of biofilm on a surface in contact with such aqueous medium, which method comprises introducing a microbiocidally effective amount of 1,3-dibromo-5,5-dimethylhydantoin into the aqueous medium, wherein (i) the quantity by weight of 1,3-dibromo-5,5-dimethylhydantoin introduced into the aqueous medium is less than the quantity by weight of N,N'-bromochloro-5,5-dimethylhydantoin that would be required to effect the same degree of microbiological control in said medium, (ii) the quantity of 1,3-dibromo-5,5-dimethylhydantoin introduced into the aqueous medium releases an amount of "free chlorine" that is greater than the amount of "free chlorine" that would be released in said medium by an equimolar quantity of N,N'-bromochloro-5,5-dimethylhydantoin, and (iii) the amount of "free chlorine" released by the quantity of the 1,3-dibromo-5,5-dimethylhydantoin introduced into said medium is greater than the amount of "free chlorine" that could be predicted to be released by that quantity of 1,3-dibromo-5,5-dimethylhydantoin on the basis of the amount of "free chlorine" that would be released in said medium by an equimolar quantity of N,N'-bromochloro-5,5-dimethylhydantoin.

9. A method of claim 8 wherein the 1,3-dibromo-5,5-dimethylhydantoin being used has an average particle size of at least about 175 microns.

10. A method of claim 8 wherein the 1,3-dibromo-5,5-dimethylhydantoin being used has an average particle size of at least about 200 microns.

11. A method of claim 8 wherein the 1,3-dibromo-5,5-dimethylhydantoin being used has an average particle size of at least about 300 microns.

12. A method of claim 8 wherein the 1,3-dibromo-5,5-dimethylhydantoin being used is in the form of a shape-retentive pressure compacted article produced by pressure compacting 1,3-dibromo-5,5-dimethylhydantoin particulate solids without use of a binder and without prior treatment of such solids to enhance their compactibility.

13. A method of claim 12 wherein the 1,3-dibromo-5,5-dimethylhydantoin particulate solids used in forming said article had, prior to compaction, an average particle size of at least about 175 microns.

14. A method of claim 8 wherein the 1,3-dibromo-5,5-dimethylhydantoin being used is in the form of a shape-retentive pressure compacted article produced by pressure compacting 1,3-dibromo-5,5-dimethylhydantoin particulate solids with use of a binder.

15. A method of claim 14 wherein the 1,3-dibromo-5,5-dimethylhydantoin

particulate solids used in forming said article had, prior to compaction, an average particle size of at least about 175 microns.

16. A method of claim 8 wherein the 1,3-dibromo-5,5-dimethylhydantoin being used is in the form of a compacted product produced using as a binder an amount of a micronized synthetic polyolefin-based hydrocarbon wax and/or a micronized synthetic polyfluorocarbon wax effective to form said compacted product, said wax being compatible with said 1,3-dibromo-5,5-dimethylhydantoin.

17. A method of claim 16 wherein said wax is polyethylene wax having, prior to compaction, an average particle size of no greater than about 15 microns, a maximum particle size of no greater than about 40 microns, and a density in the range of about 0.9 to about 1.4 grams per cc at 25.degree. C.

18. A method of claim 16 wherein said wax is a polyethylene wax that melts at a temperature in the range of about 109.degree. C. to about 111.degree. C.

19. A method of claim 16 wherein said wax is polypropylene wax having, prior to compaction, an average particle size in the range of about 5.0 to about 7.0 microns, a maximum particle size of about 22 microns, and a density in the range of about 0.9 to about 1.4 grams per cc at 25.degree. C.

20. A method of claim 16 wherein said wax is a polypropylene wax that melts at a temperature in the range of about 140.degree. C. to about 143.degree. C., that prior to compaction has an average particle size in the range of about 5.0 to about 7.0 microns, and that prior to compaction has a maximum particle size of about 22 microns.

21. A method of claim 8 wherein the 1,3-dibromo-5,5-dimethylhydantoin being used is in the form of a compacted product formed from 1,3-dibromo-5,5-dimethylhydantoin having an average particle size of at least 175 microns, and wherein said compacted product was produced using as a binder an amount of a saturated, normally solid, fatty amide effective to form said compacted product.

22. A method of claim 21 wherein the 1,3-dibromo-5,5-dimethylhydantoin used in forming said compacted product had an average particle size of at least about 200 microns.

23. A method of claim 21 wherein the 1,3-dibromo-5,5-dimethylhydantoin used in forming said compacted product had an average particle size of at least about 300 microns.

24. A method of effecting microbiocidal activity in water having a pH of at least about 8.0, which method comprises providing in such water using a 1,3-dibromo-5,5-dimethylhydantoin microbiocidal agent, a microbiocidally effective amount of "free chlorine" that is greater than could be predicted from the amount of "free chlorine" that would be released in said water by an equimolar quantity of N,N'-bromochloro-5,5-dimethylhydantoin, while using a smaller quantity by weight of 1,3-dibromo-5,5-dimethylhydantoin than the quantity by weight of N,N'-bromochloro-5,5-dimethylhydantoin that would be required to release in said water the same microbiocidally effective amount of "free chlorine", wherein the 1,3-dibromo-5,5-dimethylhydantoin being used is in the form of a compacted product produced using as a binder an amount of a micronized synthetic polyethylene wax effective to form said compacted product, said wax having, prior to compaction, an average particle size of no greater than about 15 microns, a maximum particle size of no greater than

about 40 microns, and a density in the range of about 0.9 to about 1.4 grams per cc at 25.degree. C., said wax being compatible with said 1,3-dibromo-5,5-dimethylhydantoin.

25. A method of claim 24 wherein said polyethylene wax melts at a temperature in the range of about 109.degree. C. to about 111.degree. C.

26. A method of effecting microbiocidal activity in water having a pH of at least about 8.0, which method comprises providing in such water using a 1,3-dibromo-5,5-dimethylhydantoin microbiocidal agent, a microbiocidally effective amount of "free chlorine" that is greater than could be predicted from the amount of "free chlorine" that would be released in said water by an equimolar quantity of N,N'-bromochloro-5,5-dimethylhydantoin, while using a smaller quantity by weight of 1,3-dibromo-5,5-dimethylhydantoin than the quantity by weight of N,N'-bromochloro-5,5-dimethylhydantoin that would be required to release in said water the same microbiocidally effective amount of "free chlorine", wherein the 1,3-dibromo-5,5-dimethylhydantoin being used is in the form of a compacted product produced using as a binder an amount of a micronized synthetic polypropylene wax effective to form said compacted product, said wax having, prior to compaction, an average particle size in the range of about 5.0 to about 7.0 microns, a maximum particle size of about 22 microns, and a density in the range of about 0.9 to about 1.4 grams per cc at 25.degree. C., said wax being compatible with said 1,3-dibromo-5,5-dimethylhydantoin.

27. A method of effecting microbiocidal activity in water having a pH of at least about 8.0, which method comprises providing in such water using a 1,3-dibromo-5,5-dimethylhydantoin microbiocidal agent, a microbiocidally effective amount of "free chlorine" that is greater than could be predicted from the amount of "free chlorine" that would be released in said water by an equimolar quantity of N,N'-bromochloro-5,5-dimethylhydantoin, while using a smaller quantity by weight of 1,3-dibromo-5,5-dimethylhydantoin than the quantity by weight of N,N'-bromochloro-5,5-dimethylhydantoin that would be required to release in said water the same microbiocidally effective amount of "free chlorine", wherein the 1,3-dibromo-5,5-dimethylhydantoin being used is in the form of a compacted product produced using as a binder an amount of a micronized synthetic wax effective to form said compacted product, wherein said wax is a polypropylene wax that melts at a temperature in the range of about 140.degree. C. to about 143.degree. C., that prior to compaction has an average particle size in the range of about 5.0 to about 7.0 microns, and that prior to compaction has a maximum particle size of about 22 microns, said wax being compatible with said 1,3-dibromo-5,5-dimethylhydantoin.

[Previous Doc](#)

[Next Doc](#)

[Go to Doc#](#)

[First Hit](#) [Fwd Refs](#)[Previous Doc](#)[Next Doc](#)[Go to Doc#](#)

End of Result Set

☐ [Generate Collection](#) [Print](#)

L11: Entry 9 of 9

File: USPT

Oct 28, 2003

US-PAT-NO: 6638959

DOCUMENT-IDENTIFIER: US 6638959 B2

TITLE: Microbiological control in aqueous systems

DATE-ISSUED: October 28, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Howarth; Jonathan N.	Baton Rouge	LA		
Nalepa; Christopher J.	Baton Rouge	LA		
Sanders; Michael J.	Baton Rouge	LA		
Shelton; David L.	Baton Rouge	LA		

US-CL-CURRENT: [514/389](#); [252/175](#), [252/388](#), [252/390](#), [424/405](#), [424/406](#), [424/407](#), [424/408](#), [424/409](#), [424/417](#), [424/420](#), [424/421](#)

## CLAIMS:

That which is claimed is:

1. A method of achieving an effective "free chlorine" level in treating with a biocide water that is in contact with, or that comes into contact with, at least one iron or copper surface, which method comprises introducing into said water a biocidally effective amount of at least one biocide consisting essentially of 1,3-dibromo-5,5-dialkylhydantoin wherein said amount (i) provides in the water a biocidally effective "free chlorine" level that is within 90% of the "total chlorine" level in the water thereby enabling the rate of said 1,3-dibromo-5,5-dialkylhydantoin biocide consumption to be reduced as compared to N,N'-bromochloro-5,5-dimethylhydantoin, and (ii) reduces the rate of corrosion of said iron or copper with which the water is or comes into contact as compared to N,N'-bromochloro-5,5-dimethylhydantoin, said at least one 1,3-dibromo-5,5-dialkylhydantoin that is introduced into said water being characterized in that one of the alkyl groups in the 5-position is a methyl group and the other alkyl group in the 5-position has in the range of 1 to 4 carbon atoms.

2. A method according to claim 1 wherein said at least one 1,3-dibromo-5,5-dialkylhydantoin that is introduced into said water is 1,3-dibromo-5,5-dimethylhydantoin.

3. A method according to claim 1 wherein said at least one 1,3-dibromo-5,5-dialkylhydantoin is introduced continuously or substantially continuously into said water from a dispenser containing and dispensing said at least one 1,3-dibromo-5,5-dialkylhydantoin at a rate that maintains in the water said biocidally effective amount.

4. A method according to claim 3 further comprising periodically charging said dispenser with granules of said at least one 1,3-dibromo-5,5-dialkylhydantoin that are able to be dissolved and dispensed from said dispenser at a rate that maintains in the water said biocidally effective amount.

5. A method according to claim 4 wherein said dispenser is a floater-type dispenser.

6. A method according to any of claim 4 or 5 wherein said at least one 1,3-dibromo-5,5-dialkylhydantoin that is introduced into said water is 1,3-dibromo-5,5-dimethylhydantoin, and wherein said granules of 1,3-dibromo-5,5-dialkylhydantoin are able to be dissolved in quiescent water that is at a temperature of 25.degree. C. at a rate such that 60 minutes after initial contact, the water contains in the range of about 75 to about 430 mg/L of "free chlorine" per gram of granules.

7. A method according to any of claim 4 or 5 wherein said at least one 1,3-dibromo-5,5-dialkylhydantoin that is introduced into said water is 1,3-dibromo-5,5-dimethylhydantoin, and wherein prior to introduction into said water said granules of 1,3-dibromo-5,5-dialkylhydantoin have an average crush strength of at least about 15 pounds per inch of thickness and an average size in the range of about 40 U.S. standard mesh size to about 3/8-inch.

8. A method of achieving an effective "free chlorine" level in treating with a biocide water that is or that comes into contact with at least one iron or copper surface, which method comprises treating said water with a biocide consisting essentially of at least one 1,3-dibromo-5,5-dialkylhydantoin at a rate that (i) provides in the water a biocidally effective "free chlorine" level, (ii) reduces the rate of corrosion of said iron or copper with which the water is or comes into contact as compared to N,N'-bromochloro-5,5-dimethylhydantoin, and (iii) provides in the water a "free chlorine" level that is within 90% of the "total chlorine" level in the water thereby enabling the rate of biocide consumption in treating said water to be reduced as compared to N,N'-bromochloro-5,5-dimethylhydantoin, said at least one 1,3-dibromo-5,5-dialkylhydantoin that is introduced into said water being characterized in that one of the alkyl groups in the 5-position is a methyl group and the other alkyl group in the 5-position has in the range of 1 to 4 carbon atoms.

9. A method according to claim 8 wherein said at least one 1,3-dibromo-5,5-dialkylhydantoin that is used to treat said water is 1,3-dibromo-5,5-dimethylhydantoin.

10. A method according to claim 8 wherein said at least one 1,3-dibromo-5,5-dialkylhydantoin is introduced continuously or substantially continuously into said water from a dispenser containing and dispensing said at least one 1,3-dibromo-5,5-dialkylhydantoin at a rate that maintains in the water said biocidally effective "free chlorine" level.

11. A method according to claim 10 further comprising periodically charging said dispenser with granules of said at least one 1,3-dibromo-5,5-dialkylhydantoin that are adapted to be dissolved and dispensed from said dispenser at a rate that maintains in the water said biocidally effective "free chlorine" level.

12. A method according to claim 11 wherein said dispenser is a floater-type dispenser.

13. A method according to claim 11 wherein said dispenser is an in-line or off-line type dispenser.

14. A method according to any of claim 11, 12, or 13 wherein said at least one 1,3-dibromo-5,5-dialkylhydantoin that is introduced into said water is 1,3-dibromo-5,5-dimethylhydantoin, and wherein said granules of 1,3-dibromo-5,5-dialkylhydantoin are able to be dissolved in quiescent water that is at a temperature of 25.degree. C. at a rate such that 60 minutes after initial contact, the water contains in the range of about 75 to about 430 mg/L of "free chlorine" per gram of granules.

15. A method according to claim 8 wherein said at least one 1,3-dibromo-5,5-dialkylhydantoin that is introduced into said water comprises 1,3-dibromo-5-isobutyl-5-methylhydantoin, 1,3-dibromo-5-n-propyl-5-methylhydantoin, or 1,3-dibromo-5-ethyl-5-methylhydantoin, or at least any two thereof.

16. A method according to claim 8 wherein said at least one 1,3-dibromo-5,5-dialkylhydantoin that is introduced into said water is 1,3-dibromo-5,5-dimethylhydantoin and 1,3-dibromo-5-ethyl-5-methylhydantoin.

17. A method according to claim 9 wherein the water that is in contact with, or that comes into contact with, at least one iron or copper surface, also is in contact with biofilm, or comes into contact with biofilm, and wherein said effective biocidally active amount of 1,3-dibromo-5,5-dimethylhydantoin results in eradication or at least effective biocidal challenge of said biofilm to a greater extent than would be accomplished by an equimolar quantity of N,N'-bromochloro-5,5-dimethylhydantoin.

18. A method of effecting microbiocidal activity in a body of water that is in contact with, or that comes into contact with, at least one iron or copper surface, which method comprises providing in said body of water by use of a biocide consisting essentially of at least one 1,3-dibromo-5,5-dialkylhydantoin, a concentration of "free chlorine" that (A) is greater than could be predicted from the concentration of "free chlorine" provided by an equimolar amount of N,N'-bromochloro-5,5-dimethylhydantoin, and (B) results in less corrosion of said at least one iron or copper surface as compared to an equal concentration of free chlorine from N,N'-bromochloro-5,5-dimethylhydantoin, said at least one 1,3-dibromo-5,5-dialkylhydantoin that is used being characterized in that one of the alkyl groups in the 5-position is a methyl group and the other alkyl group in the 5-position has in the range of 1 to 4 carbon atoms.

19. A method according to claim 18 wherein said at least one 1,3-dibromo-5,5-dialkylhydantoin that is used is 1,3-dibromo-5,5-dimethylhydantoin.

20. A method according to claim 18 wherein said at least one 1,3-dibromo-5,5-dialkylhydantoin that is used enables the rate of biocide consumption in treating said water to be reduced as compared to N,N'-bromochloro-5,5-dimethylhydantoin.

21. A method according to claim 20 wherein said at least one 1,3-dibromo-5,5-dialkylhydantoin that is used is 1,3-dibromo-5,5-dimethylhydantoin.

22. A method according to claim 18 wherein prior to use said at least one 1,3-dibromo-5,5-dialkylhydantoin that is used is in the form of granules free of hydrophobic binder, which granules have an average crush strength of at least

15 pounds per inch of granule thickness, and an average size in the range of about 40 U.S. standard mesh size to about 3/8-inch.

23. A method according to claim 22 wherein said at least one 1,3-dibromo-5,5-dialkylhydantoin that is used in the form of granules is 1,3-dibromo-5,5-dimethylhydantoin.

24. A method according to any of claim 22 or 23 wherein prior to use said granules are devoid of any added component contributing crush strength or binding action to the granules, and wherein prior to use said granules have an average crush strength of at least 20 pounds per inch of granule thickness.

[Previous Doc](#)

[Next Doc](#)

[Go to Doc#](#)